

NOAA Outreach for JPSS

Leveraging Suomi NPP Advancements to
Improve NOAA Communications and Education

Dan Pisut

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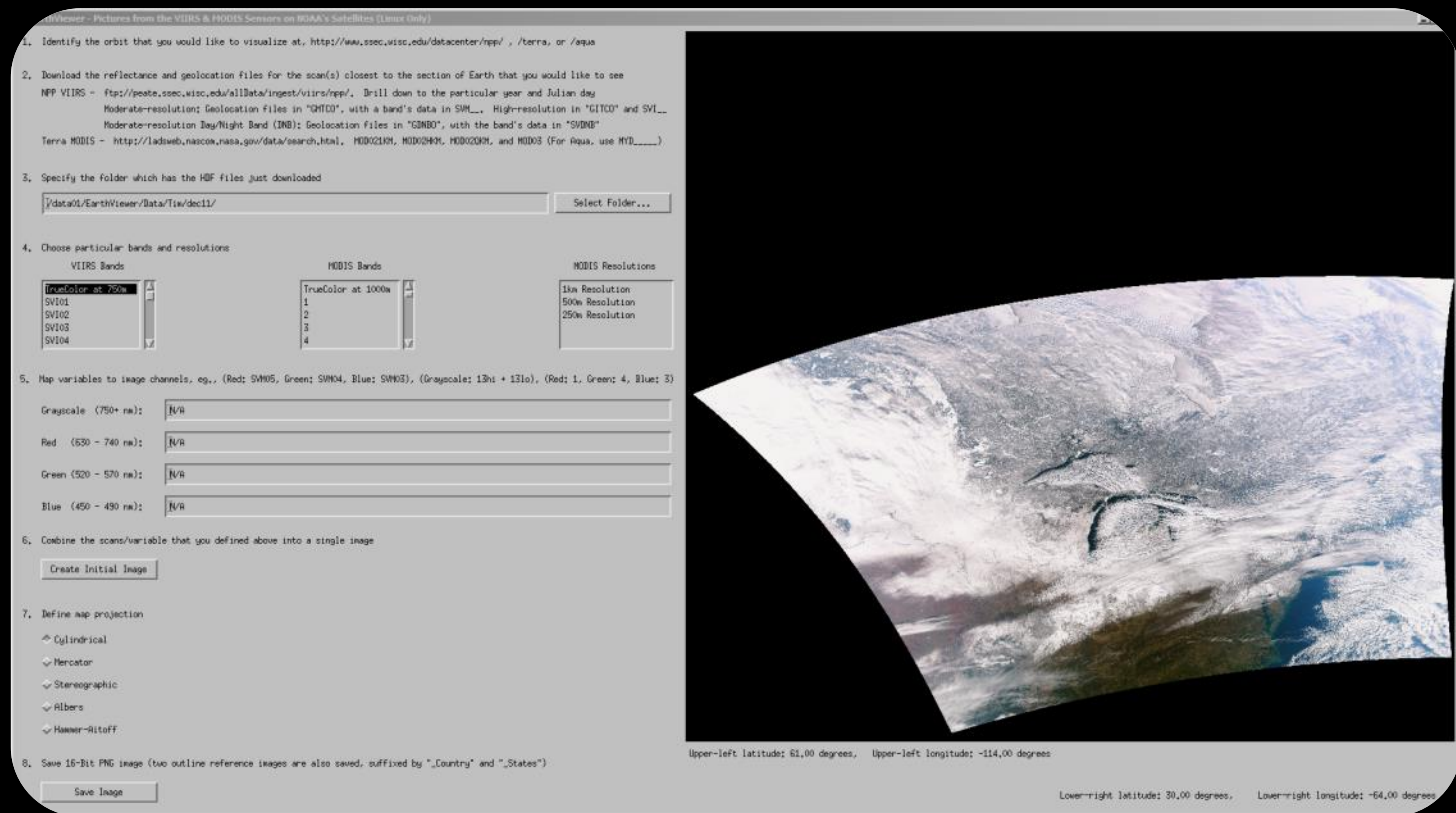
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From the Very Beginning...

The VIIRS *EarthViewer* Tool



Needed a simple solution to rapidly visualize full-resolution VIIRS imagery

- Compiled IDL program
- Atmosphere corrected true color imagery
- Individual bands (DNB, SVM and SVI) and RGB composites
- Band subtraction



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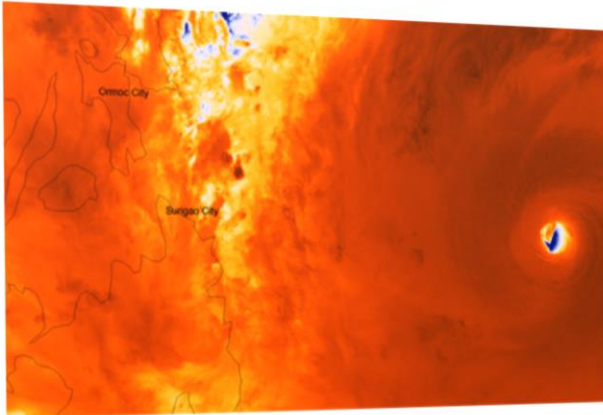
WEATHER -- NOVEMBER 7, 2013 AT 5:30 PM ET

Typhoon Haiyan hits the Philippines with near-200 mph winds

BY: NEWS DESK

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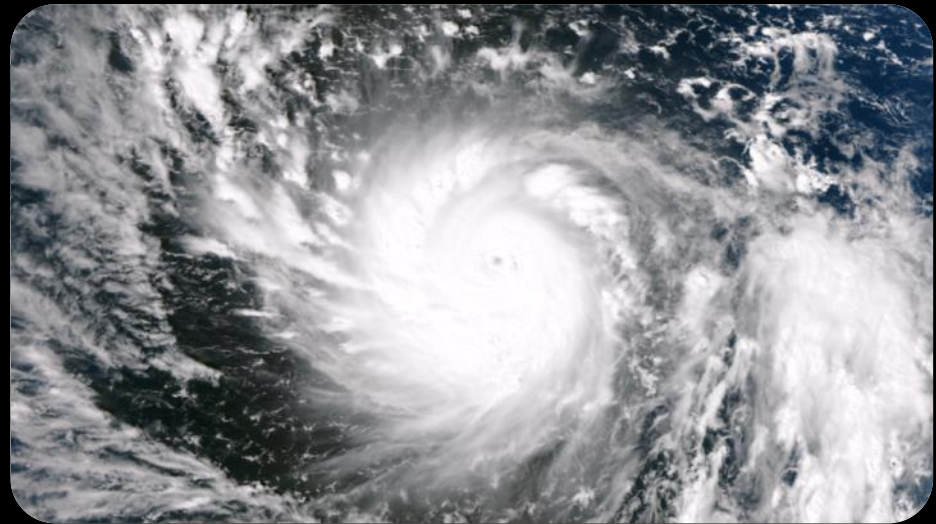


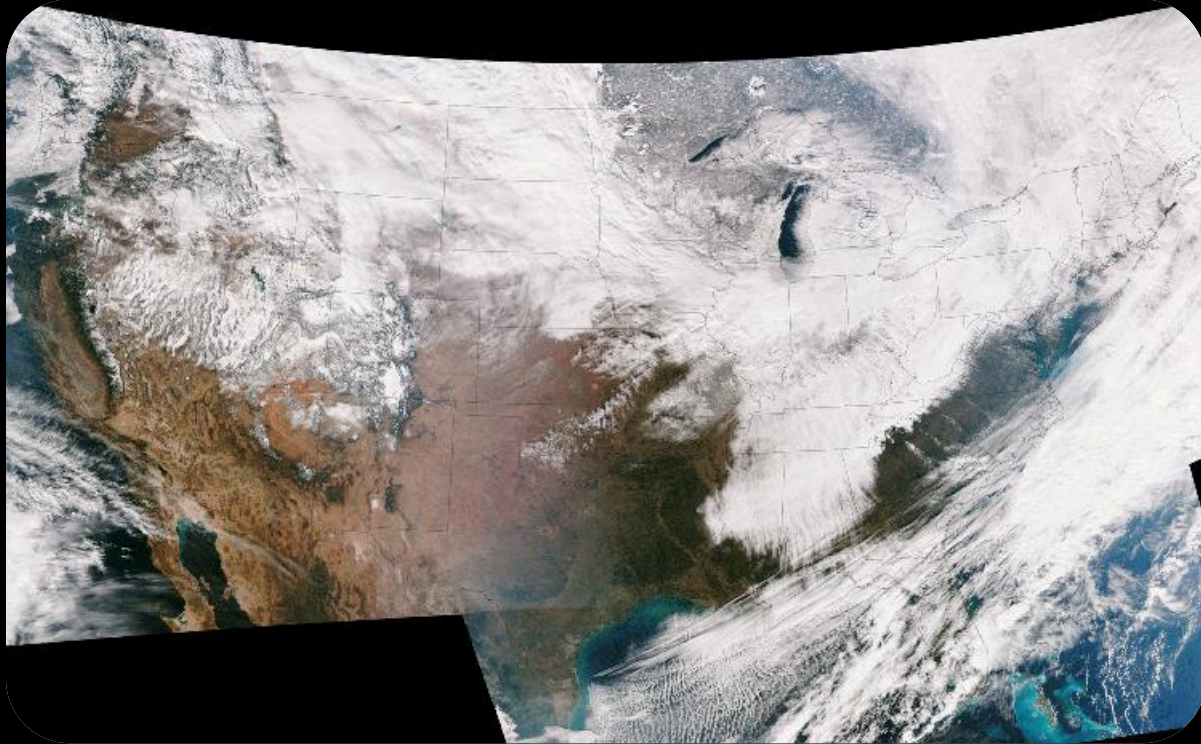
Infrared image of Super Typhoon Haiyan's eye. Image via NOAA

Updated 5:30 p.m. ET | Typhoon Haiyan made landfall with the

Significant Events

SUPER TYPHOON HAIYAN



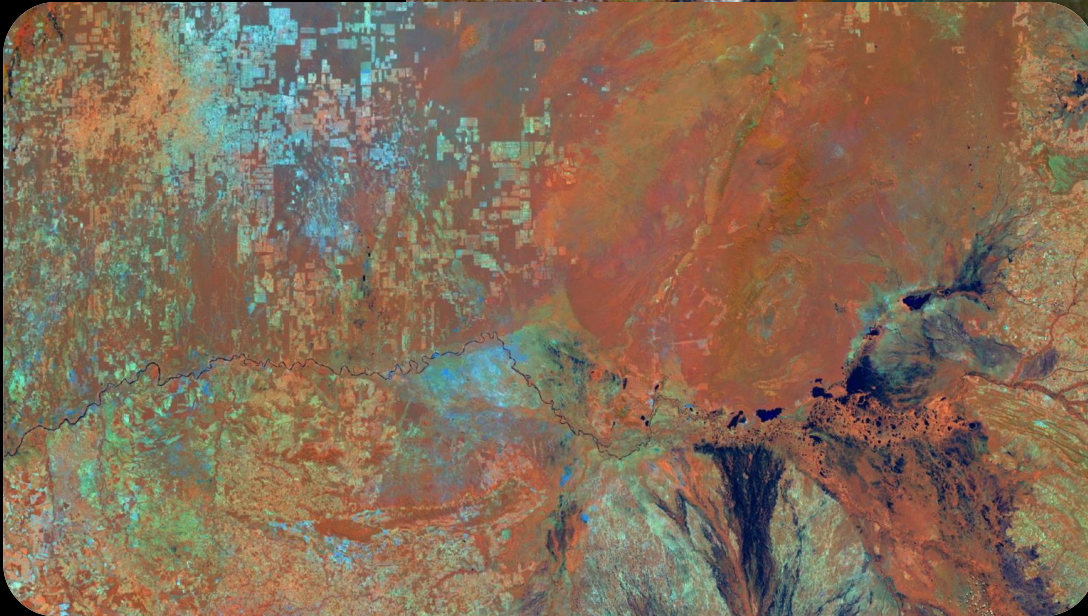
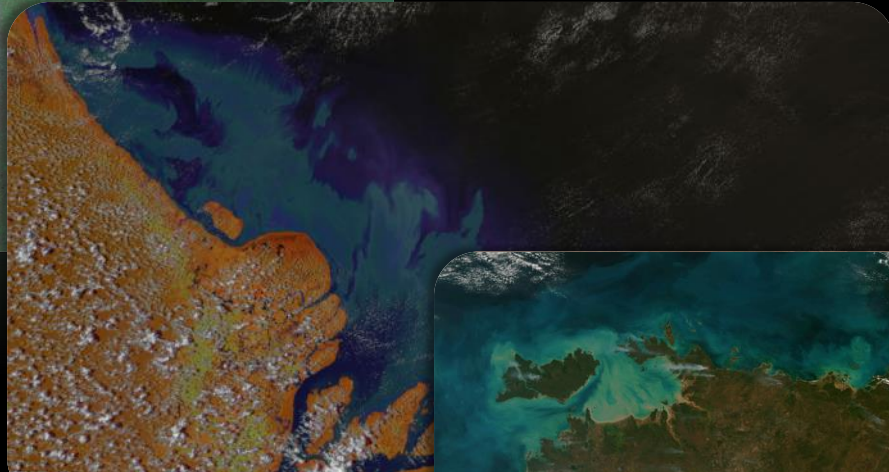
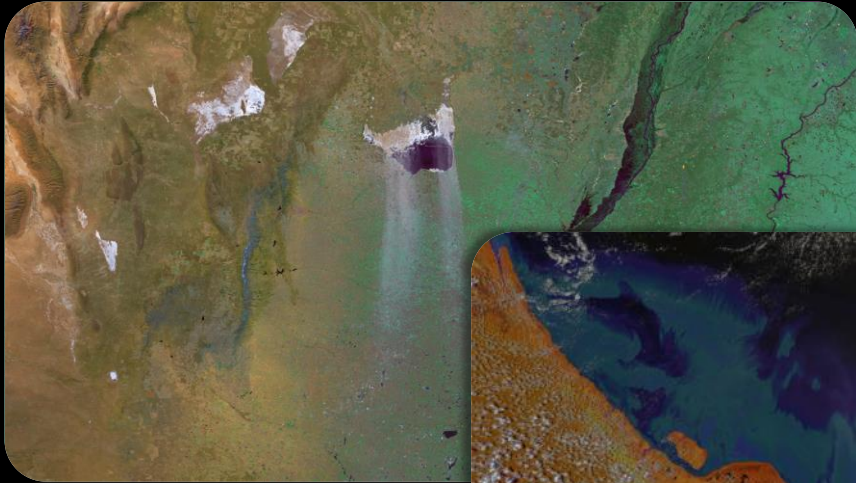


Daily CONUS VIIRS True Color (full res 750m)

<http://www.nnvl.noaa.gov/images/NPP/USA-VIIRS-Color.png>

also on NESDIS website: About Suomi NPP

Earth Images Collection





VIIRS Day-Night Band Tropical Cyclone Mahasen



EARTHWEEK
A DIARY OF THE PLANET

Close Window

Cyclonic Gravity Waves: Earth Image of the Week

May 24, 2013



The relatively new Suomi NPP satellite has revealed details of the chaos within a tropical cyclone in far greater resolution than ever before observed.

Cyclone Mahasen was skirting India's eastern coast on Monday, May 13, before eventually striking Bangladesh.

The image to the right provides a unique view of the storm in contrast to the mainland of India and adjacent Sri Lanka.

The circular patterns over the Bay of Bengal appear to be similar to what happens when a large stone is thrown into the water — ripples emanate in all directions.

But the force that caused the "gravity waves" in the image were generated by the force of developing Cyclone Mahasen.

It sent out ripples through the atmosphere as well as the sea surface that were visible due to a unique set of conditions.

The Suomi NPP satellite's day/night sensor can see light in both the infrared and visible spectrums at the same time.

The lights and highways of India are clearly visible beneath clear skies in visible light. But because the moon was in its new phase at the time of the image, it wasn't illuminating the cloud tops of the cyclone.

This allowed the infrared sensors to pick up the temperature differences in the gravity waves as they spread outward from the cyclone's center.

The bright streak through the center of the wave pattern was a lightning bolt that struck just as the Suomi NPP sensors were capturing the image. The bolt appears as a long streak due to the scanning technique used by the sensors.



Like waves from a stone thrown on a pond, Mahasen's power created ripples on the Bay of Bengal.

Full story and image: NOAA

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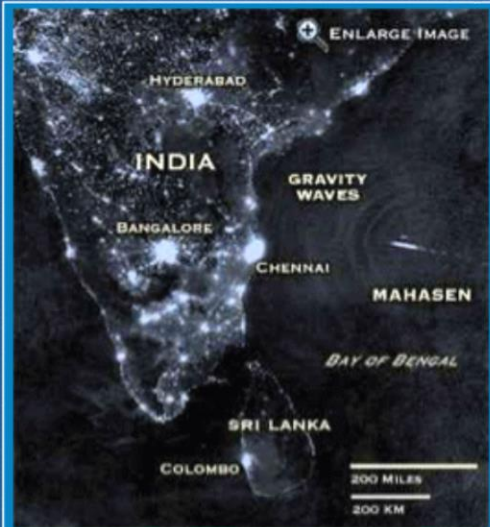
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#NOAAGreen using VIIRS NDVI

www.nnvl.noaa.gov/green.php

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Need HD version of the movie above? Save this link.

Select another video:


Green: Vegetation on Our Planet

June 19, 2013

Although 75% of the planet is a relatively unchanging ocean of blue, the remaining 25% of Earth's surface is a dynamic green. Data from the VIIRS sensor aboard the NASA/NOAA Suomi NPP satellite is able to detect these subtle differences in greenness. The resources on this page highlight our ever-changing planet, using highly detailed vegetation index data from the satellite, developed by scientists at NOAA. The darkest green areas are the lushest in vegetation, while the pale colors are sparse in vegetation cover either due to snow, drought, rock, or urban areas. Satellite data from April 2012 to April 2013 was used to generate these animations and images.


[Click here for a more detailed description of vegetation indexes and how these resources were created.](#)

Maps



click image to zoom

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Image Description

March 18-24, 2013


The "river of grass" extending south of Lake Okeechobee shows clear signs of its modified state with areas of dense agriculture, urban sprawl and water conservation areas delineated by a series of waterways that crisscross Southern Florida.

Green: Vegetation on Our Planet




What is a vegetation index?

There are many types of indices that measure vegetation and many are calculated by using satellite data to measure the relative difference between how much energy is absorbed by the land surface versus how much is reflected back into space. Plants absorb visible light to undergo photosynthesis, so areas with vegetation reflect very little of the visible light. However, the vegetation reflects back more near-infrared light than it absorbs, so the ratio of near-infrared light to visible light is high. The difference between the two is the vegetation index. The VIIRS sensor on the Suomi NPP satellite is capable of measuring these different types of visible and near-infrared light.




How is it used?

Understanding the vegetation of the surface has many applications from weather and ecological forecasting to understanding land practices for land use. First by great analysis of vegetation changes from week to week give us early warning for the occurrence of drought, meanwhile, the conditions in each other months may be used to find the best time for planting. Because vegetation greatly affects the earth's surface temperature, and relative humidity of an area, many complex weather forecasts are beginning to integrate vegetation dynamics into numerical models. Even golf course planners use the data for planning an optimal landscape architecture for greens, fairways, and the surrounding roughs.




Why is this data so much better than what was previously available?

For the past 20 years, NOAA has used the AVHRR sensor on its polar-orbiting satellites to generate estimates of the vegetation index at a resolution of 1 km per pixel. In 2012, NOAA launched the first VIIRS sensor into space orbiting the Earth satellite, improving the data gathering to 300 meters per pixel. However, with both AVHRR and VIIRS, the better away the data is from the center of the orbit swath, the more blurred the images get. In this same way that the data gets blurred as it moves away from the center of the orbit, the data gets more blurred as it moves away from the center of the orbit. The VIIRS sensor does not have this problem; the imagery is nearly the same quality for most areas of the globe. So, not only is the data 3 times more detailed than with AVHRR, it is also 3 times better in terms of consistent quality than with AVHRR and VIIRS.




Where are the clouds?

Cloud cover is probably the most dynamic feature of the surface of the planet. However, from the vantage of a satellite, there are usually enough areas without cloud cover that are clear to the satellite. Computer programs are used to identify the best cloud-free measurements for every year on the planet, and these individual measurements are added together to form a single cloud-free mosaic of the planet.




How much data was used?

Compiling weekly mosaic from data at such high resolution is a technical feat. The VIIRS sensor acquires 300 megabytes of data every month just for the four channels of visible and near-infrared imagery used in the vegetation index. Multiplying that over one week and it is an astounding 2 TB of data. More than 10 TB per day. One month, and that does not even include the other 11 channels of data collected by VIIRS.



What are the uses of the images?

As 300 meters per pixel, the images that the data generates are usually large. Each weekly mosaic vegetation image is around 1.5 gigabytes in size and 60,000 x 60,000 pixels in dimension. That is a massive size. If you were to print the image, it would require a piece of paper 111 inches long by 300 inches wide (or 9.25 x 6.6 feet).



Interactive map at <http://www.nnvl.noaa.gov/Green.html>

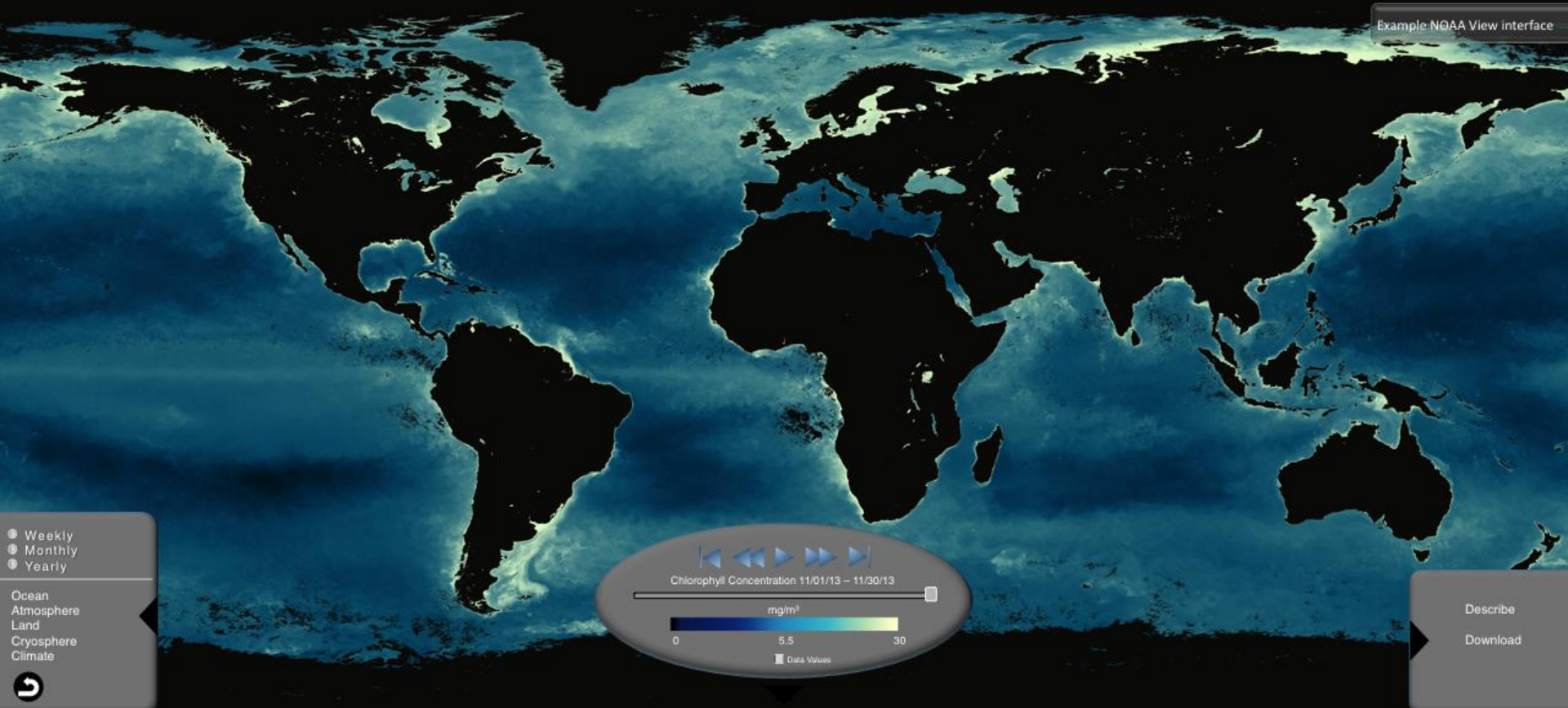
#NOAAGreen using VIIRS NDVI

- National Geographic
- CBS News
- MSN
- Yahoo News
- Washington Post
- CNET
- Wall Street Journal
- Science World Report
- Baltimore Sun
- iTech Post
- Huffington Post
- Earth and Sky
- The Atlantic
- Daily Mail (UK)
- Universe Today
- Space.com

Stats from the week of release

- 300,000 video views on YouTube
- 5 consecutive 1 million hit days
- 15 million total web hits
- 35 terabytes of imagery served





NOAAView www.nnvl.noaa.gov/view

- 60+ datasets
- 5 EDR products from Suomi NPP (more in development)
- Updated in real-time
- S-NPP archives back to January 2013; full archives of other data

Climate Literacy for NC Teacher

Promoting Climate Literacy in the Classroom

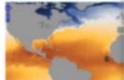
About Home NC CLIMATE

THURSDAY, DECEMBER 5, 2013

NOAA View Data Imagery Portal

The NOAA View Data Imagery Portal is Here you will find easy access to NOAA oceans, atmosphere, land, cryosphere and you select, daily, weekly, monthly and/or you can adjust the visualization to view as a time period and by clicking the "data val" data for a particular area of interest. For background information and links to related be downloaded as high resolution image video tutorial is available.

The screen shot below is of sea surface temperature, 2013.



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Explore a World of Data with NOAA View

Read More About: [NOAA View Data Imagery Portal](#)

Elmhurst College

Online Certificate Program

Nov 5, 2013 - A new offering is available on the website today: NOAA View. The NOAA View imagery portal provides a single point for experiencing NOAA data from satellites, models, and in-situ analyses. The site allows for seamless browsing, animation, and download capability of high resolution images and Google Earth formatted files, with over 50 datasets and growing that go as far back as 1980 and out to 2100. NOAA View provides the ability to see our dynamic planet and how it changes over weeks, months, years and even decades.

One example of this change is illustrated in these images, taken directly from NOAA View. The two glasses illustrate the changes in ocean acidification that are expected as the ocean continually absorbs carbon dioxide from the atmosphere. As more and more carbon dioxide reaches the ocean, the pH of the water decreases, which in turn causes the shells of many marine organisms to dissolve.

AnyGeo blog

Anything Geospatial for the Blogosphere

LearnedTech Bringing User Group Meets to D.C., Baltimore, and Philly in November

Educators Gain access to Environmental Data

Posted on November 5, 2013 by alex

Something new this week as NOAA introduces the public and educators access to environmental data portal provides a single point for experiencing information captured by satellites, inserted into the public domain, and download high resolution images and Google Earth formatted files, with over 50 datasets and growing that go as far back as 1980 and out to 2100. NOAA View provides the ability to see our dynamic planet and how it changes over weeks, months, years and even decades.



The Atlantic CITIES PLACE MATTERS

JOBS & ECONOMY COMMUTE

The Climate Mapping Waiting For

JOHN METCALFE NOV 06, 2013 7 COMMENTS

Weather geeks, say goodbye to your morning porridge rolled their latest environmental visualization out of possible thing you'd want to know about the planet's future.

Want to know what the clouds like looked during the year? The frozen stuff is splashed accumulated this year? The frozen stuff is splashed How hot will the weather soon be if humanity does simulations crammed into this Swiss Army climate warm, despite our best attempts to stop burning fossil fuels.

Here's a closer look at that particular climate model.

Google Maps Mania

Google Maps Mania is an unofficial Google Maps fan site.

Wednesday, November 6, 2013

A World of Data



The National Oceanic and Atmospheric Administration (NOAA) allows users to view and download data from the Earth formatted files from one of five categories: Ocean, Atmosphere, Land, and more.

NOAA View allows you to browse Earth formatted files from one of five categories: Ocean, Atmosphere, Land, and more. NOAA View allows you to browse Earth formatted files from one of five categories: Ocean, Atmosphere, Land, and more.

Posted by Keir Clarke at 12:00 PM

Labels: climate, data, NOAA, view

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NOAA's New Cool Tool Puts Climate on View for All

Published: November 7th, 2013

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By Brian Kahn Follow @briankahn 813 followers

Sifting through the massive amount of climate and weather data collected by the National Oceanic and Atmospheric Administration (NOAA) can be daunting. However, a new tool released Tuesday brings that data to the masses and with a few clicks of the mouse or taps on the screen, creates interactive maps that clearly show natural and manmade shifts in the climate and oceans around the world.

The National Climatic Data Center alone contains over 6 petabytes of data. That's enough data to fill more than 49,000 hard drives in the hottest iPad Air. Other NOAA data centers house still more information on Arctic sea ice, the deep ocean, fisheries, and climate projections collected from satellites, weather stations, buoys, ocean sounds and computer models.

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Earth at a Glance



Image courtesy of NASA

- Leverage NOAA View services
- Provides current image output from S-NPP EDR's
 - Imagery, LST, SST, Chl-a, Snow/Ice, Albedo, AOT, EVI, TPW, Atm Temp, Ozone, Net Solar, OLR
- Market to museums and science centers at next ASTC (Association of Science - Technology Centers)

Collaborating with Museums

NOAA Science On a Sphere®
& CIMSS/CICS EarthNOW



The screenshot shows the American Museum of Natural History website. The header includes the museum's name and a search bar. A navigation menu lists various sections like 'Plan Your Visit', 'Exhibitions', and 'Learn & Teach'. Below the menu, the 'Science Bulletins' section is highlighted, featuring a video player. The video is titled 'Greening of the Arctic' and shows a map of the Arctic region with a play button in the center. To the right of the video player, there is a text block describing the video's content, followed by social media sharing links and a 'Download the Video' link.

AMERICAN MUSEUM
OF NATURAL HISTORY

Select Language

Search Keywords or Topics GO

Plan Your Visit Exhibitions Learn & Teach Explore Our Research Calendar Join & Support Buy Tickets

SHARE: 0

Science Bulletins

Greening of the Arctic

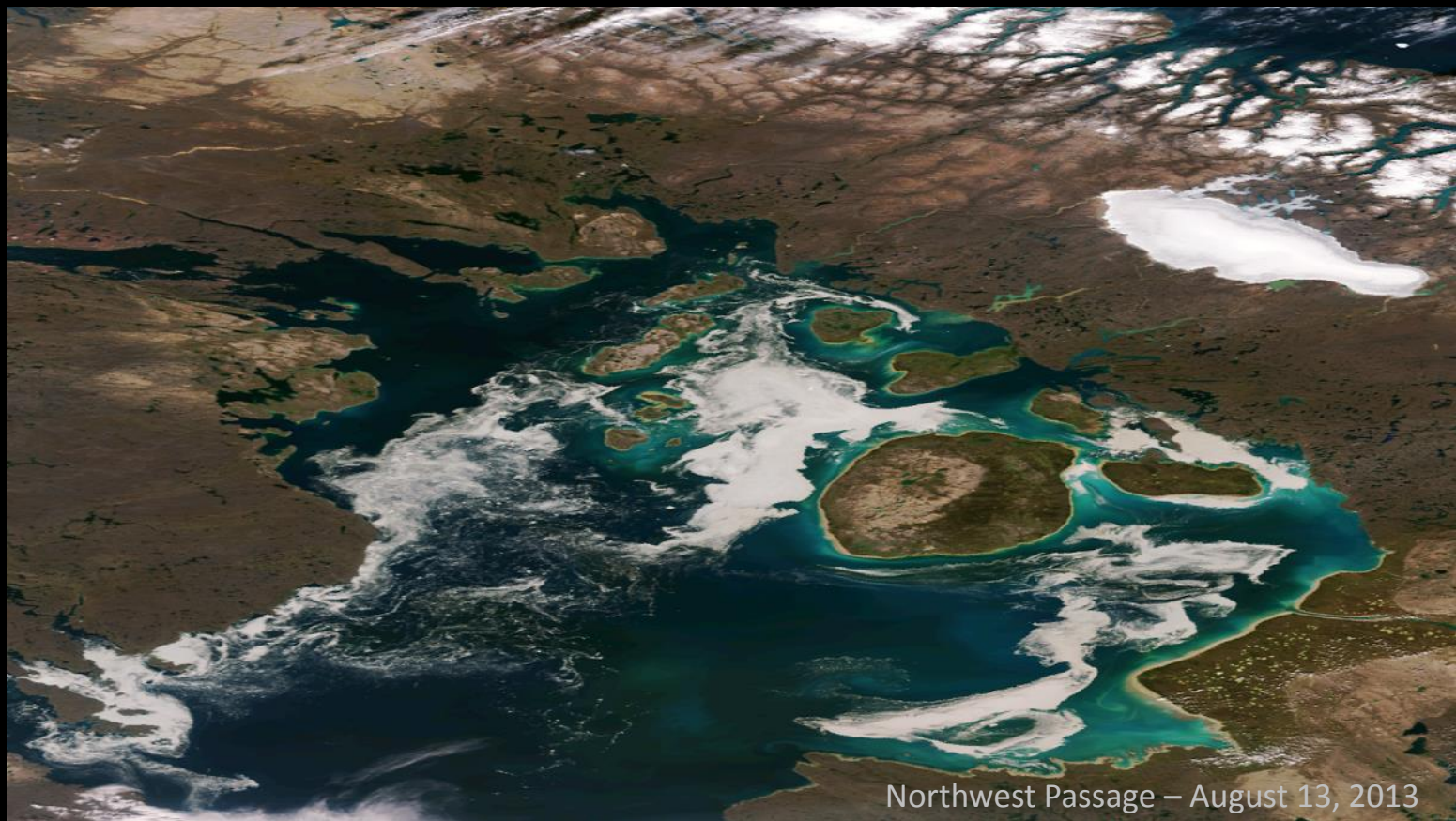
November 2013

In the Arctic, where air temperatures are rising at about twice the global rate, scientists are seeing major shifts in plant life. Trees and shrubs are expanding by pushing northward, while the low-to-the-ground tundra plants to their north are shrinking in range. In this visualization, watch these changes and the influence they are forecasted to have on the climate system.

[Dataset Information](#)
[Google+ Hangout](#)
[For Science on a Sphere](#)
[Related Links](#)

Download the Video: [HD](#)

www.amnh.org/explore/sciencebulletins



Acknowledgements

- VisLab Team: Vivek Goel, Tim Loomis, Daniel Cowan, Brandon Mills, Marc Pulliam
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